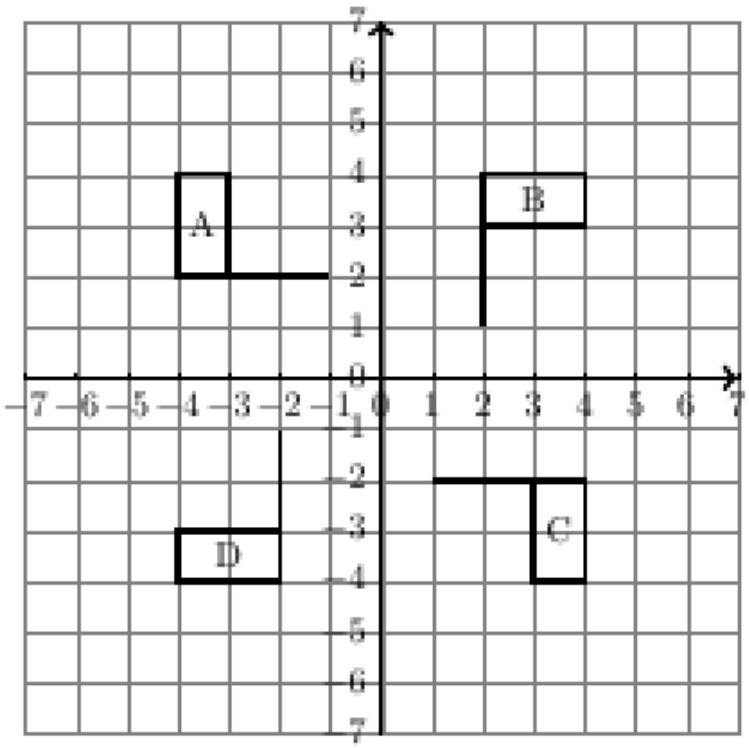
Topic: Rotating figures in coordinate space

Question: Which description could not be the rotation that's pictured?

Suppose one of the flags A, B, or C is rotated around $(0,0)$ to position D.



Answer choices:

A A rotates counterclockwise $90°$

B B rotates clockwise $90°$

C B rotates clockwise $180°$

D C rotates counterclockwise $270°$

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Solution: B

Answer choice B, "B rotates clockwise $90°$", would put the new flag image at position C, not D, so the description given in answer choice B would not work.

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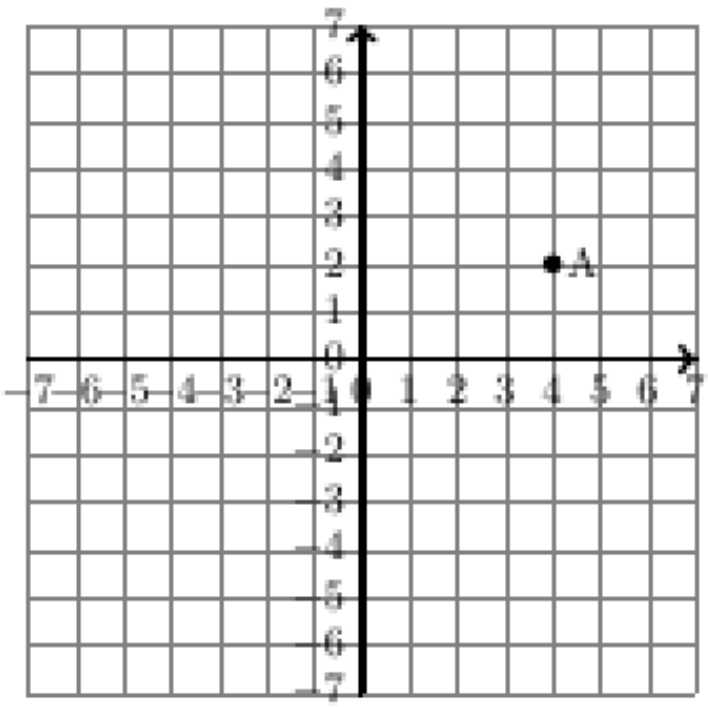
Question: Where will the new point be?

If you rotate A clockwise $90°$ around $(0,0)$, where will the image of point A be?



Answer choices:

A $(-2,4)$

B $(-4,2)$

C $(-2,-4)$

D $(2,-4)$

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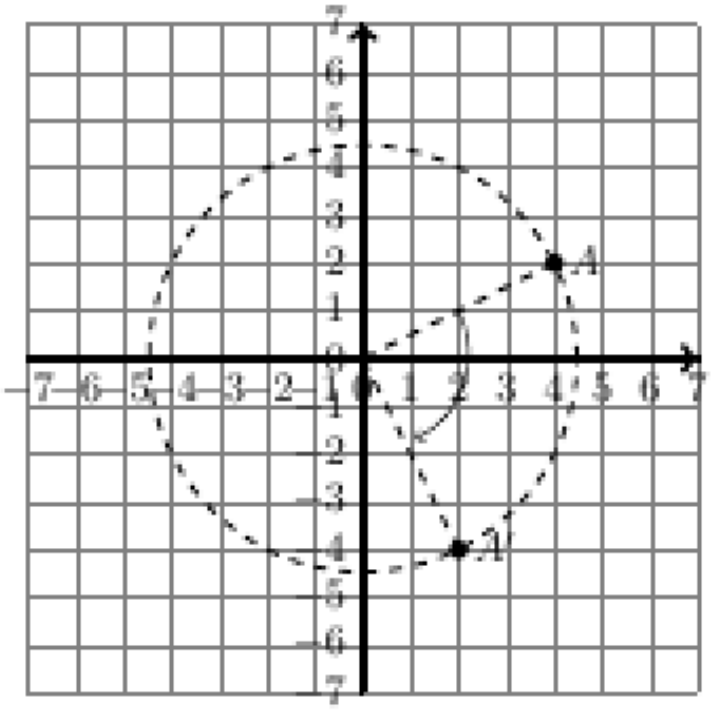
Solution: D



The figure shows point A being rotated clockwise $90°$, ending at $(2, -4)$.

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Question: This could be described as which rotation?

Suppose a point (h, k) is rotated around $(0,0)$ to the position $(-h, -k)$.

Answer choices:

A Clockwise $180°$

B Counterclockwise $90°$

C Counterclockwise $270°$

D Clockwise $270°$

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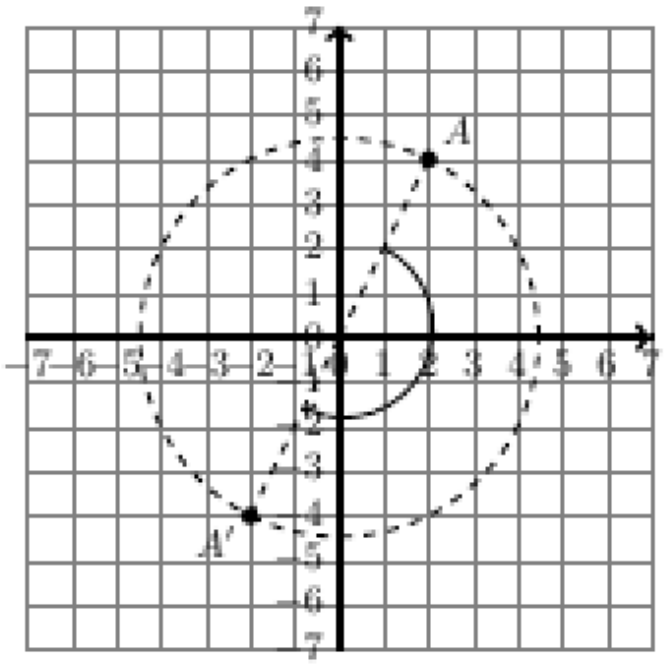
Solution: A

The easiest way to solve this problem is to use a numerical example.

Let $(h, k) = (2,4)$ and plot it as A.

Now $(-h, -k) = (-2, -4)$. Plot and label it A'.

It's pretty clear that A' is on a line exactly through A and $(0,0)$. In other words, we see a clockwise rotation of $180°$.



Answer choice A works. Note: It would have been just as valid to say a counterclockwise rotation of $180°$.

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